

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

|                      |                                 |
|----------------------|---------------------------------|
| <b>Part Number:</b>  | GDT35-42-S1-RP                  |
| <b>Manufacturer:</b> | Bourns Inc.                     |
| <b>Package:</b>      | Tape & Reel (TR), Cut Tape (CT) |
| <b>Availability:</b> | Please confirm with sales       |

#### Product Page:

<https://antrexco.com/product/details/bourns-inc/gdt35-42-s1-rp.html>

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### Contact Information

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New & Original Components

Supplier verification and packaging condition review

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Secure sourcing support for OEM / EMS projects

#### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



## Features

- Fast response time
- Wide temperature range
- High surge current rating
- Low capacitance and insertion loss
- Stable performance throughout life
- Small surface mount package
- RoHS compliant\*



Selected as one of the **Top 10**  
Circuit Protection Devices  
of 2023 by *Electronic Products*

## GDT35 Series - Next-Generation 3-Electrode Gas Discharge Tube Arrestor

### General Information

Bourns' new and improved next-generation surface mount 3-electrode GDT surge protection devices have been designed using Bourns' proprietary, advanced computer simulation techniques and offer superb maximum impulse voltage limiting specifications for this class of GDT in a small, environmentally rugged surface mount package. The performance delivered in the Bourns® GDT35 Series helps to significantly heighten protection against induced voltage transients such as lightning and AC induction. Plus, the enhanced level of protection with tighter voltage limiting provided during fast-rising events is designed to reduce stress on downstream components compared to current GDT designs in the same application.

### Product Characteristics

|                                        |                   |
|----------------------------------------|-------------------|
| Storage Temperature Range .....        | -55 °C to +125 °C |
| Operating Temperature Range .....      | -55 °C to +125 °C |
| Climate Category (IEC 60068-1) .....   | .55 / 125 / 21    |
| Moisture Sensitivity Level (MSL) ..... | 1                 |
| ESD Classification - HBM .....         | N/A               |

### How to Order

|                                                   |                        |            |  |  |
|---------------------------------------------------|------------------------|------------|--|--|
| Description                                       | GDT 3 5 - xx - S1 - RP |            |  |  |
| GDT = Gas Discharge Tube - Next-Generation Series |                        |            |  |  |
| Electrodes                                        |                        |            |  |  |
| 3 = 3-Electrode                                   |                        |            |  |  |
| Size                                              |                        |            |  |  |
| 5 = 5 mm Diameter                                 |                        |            |  |  |
| Voltage                                           |                        |            |  |  |
| 07 = 75 V                                         | 23 = 230 V             | 42 = 420 V |  |  |
| 09 = 90 V                                         | 25 = 250 V             | 47 = 470 V |  |  |
| 11 = 110 V                                        | 30 = 300 V             | 60 = 600 V |  |  |
| 15 = 150 V                                        | 35 = 350 V             |            |  |  |
| 20 = 200 V                                        | 40 = 400 V             |            |  |  |
| Package Designator                                |                        |            |  |  |
| S1 = 5 x 7.2 mm SMD (Standard)                    |                        |            |  |  |
| Packaging Options                                 |                        |            |  |  |
| RP = Reel Pack (Standard)                         |                        |            |  |  |
| BK = Bulk                                         |                        |            |  |  |

**BOURNS®**

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[www.bourns.com](http://www.bourns.com)



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

\*\* Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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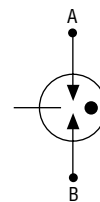


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### Agency Recognition

| Agency | Category              | Agency File No.         |
|--------|-----------------------|-------------------------|
| UL     | 497B -<br>4th Edition | <a href="#">E153537</a> |

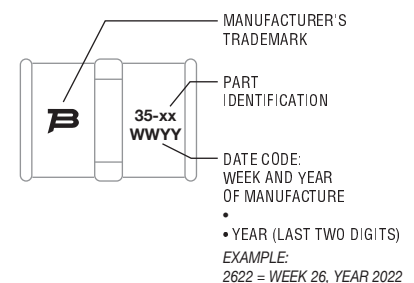
### Circuit Diagram



Note: Gas discharge tubes are  
bidirectional and non-polarized.

### Typical Part Marking

Represents total content. Layout may vary.



## Applications

- Set top boxes
- Industrial communications
- HVAC controls
- xDSL, POTS, G.Fast
- Antennae

## GDT35 Series - Next-Generation 3-Electrode Gas Discharge Tube Arrestor

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### Electrical Characteristics

Test Methods per ITU-T K.12, IEEE C62.31 and IEC 61643-311 GDT standards.

| Bourns Part No. | Device Specifications <sup>(1)</sup>         |                                      |         |                                   |              |             |                                |                |                            |
|-----------------|----------------------------------------------|--------------------------------------|---------|-----------------------------------|--------------|-------------|--------------------------------|----------------|----------------------------|
|                 | DC Sparkover Voltage<br>±20 %<br>(2) (3) (4) | Impulse Sparkover Voltage<br>(2) (5) |         | Insulation Resistance (IR)<br>(6) | Glow Voltage | Arc Voltage | Glow to Arc Transition Current | Capacitance    | DC Holdover Voltage<br>(8) |
|                 | 100 V/s                                      | 100 V/μs                             | 1 kV/μs | (7)                               | 10 mA        | > 1 A       |                                | 1 MHz          | < 150 ms                   |
| GDT35-07        | 75 V                                         | 300 V                                | 650 V   | > 2 GΩ                            | ~ 70 V       | ~ 10 V      | < 0.5 A                        | < 0.7 pF (L-G) | 52 V                       |
| GDT35-09        | 90 V                                         | 350 V                                | 550 V   |                                   |              |             |                                |                | 135 V                      |
| GDT35-11        | 110 V                                        | 300 V                                | 510 V   |                                   |              |             |                                |                |                            |
| GDT35-15        | 150 V                                        | 420 V                                | 620 V   |                                   |              |             |                                |                |                            |
| GDT35-20        | 200 V                                        | 480 V                                | 640 V   |                                   |              |             |                                |                |                            |
| GDT35-23        | 230 V                                        | 510 V                                | 640 V   |                                   |              |             |                                |                |                            |
| GDT35-25        | 250 V                                        | 510 V                                | 650 V   |                                   |              |             |                                |                |                            |
| GDT35-30        | 300 V                                        | 660 V                                | 875 V   |                                   |              |             |                                |                |                            |
| GDT35-35        | 350 V                                        | 670 V                                | 810 V   |                                   |              |             |                                |                |                            |
| GDT35-40        | 400 V                                        | 670 V                                | 860 V   |                                   |              |             |                                |                |                            |
| GDT35-42        | 420 V                                        | 850 V                                | 900 V   |                                   |              |             |                                |                |                            |
| GDT35-47        | 470 V                                        | 870 V                                | 990 V   |                                   |              |             |                                |                |                            |
| GDT35-60        | 600 V                                        | 1000 V                               | 1200 V  |                                   |              |             |                                |                |                            |

| Bourns Part No. | Life Ratings (TGC) <sup>(9)</sup> <sup>(10)</sup> |                                   |                     |                         |                              |                          |
|-----------------|---------------------------------------------------|-----------------------------------|---------------------|-------------------------|------------------------------|--------------------------|
|                 | Max. Surge Current                                | Nominal Impulse Discharge Current |                     |                         | Nominal AC Discharge Current |                          |
|                 | 8/20 μs                                           | 8/20 μs                           | 10/350 μs           | 10/1000 μs              | 11 Cycles @ 60 Hz            | 1 Second                 |
| GDT35-07        | 20 kA<br>1 Operation                              | 14 kA<br>10 Operations            | 2 kA<br>1 Operation | 200 A<br>300 Operations | 20 Arms<br>1 Operation       | 10 Arms<br>10 Operations |
| GDT35-09        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-11        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-15        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-20        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-23        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-25        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-30        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-35        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-40        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-42        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-47        |                                                   |                                   |                     |                         |                              |                          |
| GDT35-60        |                                                   |                                   |                     |                         |                              |                          |

#### Notes:

- (1) At delivery AQL 0.65 Level II, DIN ISO 2859.
- (2) DC and Impulse Sparkover values are in ionized mode @ 25 °C.
- (3) Bourns recommends reflowing surface mount devices per *IPC/JEDEC J-STD-020 rev. D*.
- (4) Surface mount GDTs may exhibit a temporary increase in the DC Sparkover Voltage after the solder reflow process. The DC Sparkover Voltage will recover within 24 hours. There is no quality defect nor change in protection levels during the temporary increase in DC Sparkover Voltage.
- (5) Impulse Sparkover voltage is expressed as a maximum value, with a 99 % probability of measured values within limit.
- (6) IR limits after Life Ratings > 100 MΩ.
- (7) IR Test Voltage: 50 V for GDT35-07 and GDT35-09, 100 V for GDT35-23 and GDT35-60.
- (8) Network applied (per *ITU-T K.12 Edition 9.0, Section 7*).
- (9) DC Sparkover Voltage limits after Life Ratings may exceed +20 % but will continue to protect without venting (per *ITU-T K.12 Edition 9.0, Section 6*, where applicable).
- (10) The rated discharge current corresponds to the Total Ground Current (TGC) - each line to ground.

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## Recommended Pad Layout

Technical drawing of a 1/2-13 UNF-2B hex nut, showing front and side views with dimensions in millimeters (mm) and inches (inches).

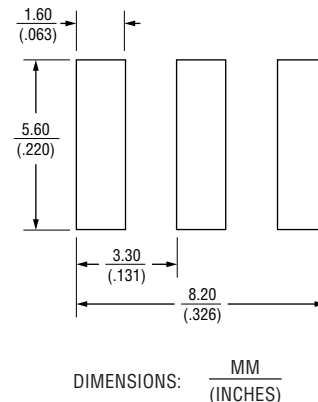
**Front View Dimensions:**

- Overall Width:  $4.90 \pm 0.20$  mm ( $.193 \pm .008$ ) inches
- Hexagon Side Width:  $3.40 \pm 0.30$  mm ( $.134 \pm .012$ ) inches, 4 PLCS.
- Hexagon Outer Diameter:  $6.00 \pm 0.30$  mm ( $.236 \pm .012$ ) inches, DIA.

**Side View Dimensions:**

- Overall Height:  $7.20 \pm 0.30$  mm ( $.283 \pm .012$ ) inches
- Hexagon Height:  $2.52 \pm 0.20$  mm ( $.099 \pm .008$ ) inches
- Hexagon Thickness:  $0.50 \pm 0.10$  mm ( $.020 \pm .008$ ) inches, 2 PLCS.
- Hexagon Inner Diameter:  $1.16 \pm 0.10$  mm ( $.046 \pm .004$ ) inches
- Hexagon Outer Diameter:  $5.10 \pm 0.20$  mm ( $.201 \pm .008$ ) inches, 2 PLCS.

**DIMENSIONS:** MM (INCHES)



The graph illustrates a heat treatment cycle with Temperature (°C) on the y-axis and Time (Seconds) on the x-axis. The cycle begins at 25°C, enters a preheat phase of duration  $t_s$  to reach  $T_{smin}$ , then ramps up to a peak temperature  $T_p$  at time  $t_p$ . The ramp-up phase is labeled 'RAMP-UP' and has a duration  $t_L$ . The peak temperature  $T_p$  is marked on the y-axis. The ramp-down phase is labeled 'RAMP-DOWN' and has a duration  $t_r$ . A shaded area labeled 'CRITICAL ZONE  $T_L$  to  $T_P$ ' indicates the temperature range during the ramp-up phase. The y-axis also shows  $T_{smax}$  and  $T_L$ . The x-axis shows the total time from 25°C to Peak as  $t$ .

| Reflow Condition                                                 |                                   | Pb-free Assembly   |
|------------------------------------------------------------------|-----------------------------------|--------------------|
| Preheat                                                          | Temperature Min. ( $T_{S(min)}$ ) | 150 °C             |
|                                                                  | Temperature Max. ( $T_{S(max)}$ ) | 200 °C             |
|                                                                  | Time (Min. to Max.) ( $T_S$ )     | 60 – 120 seconds   |
| Average Ramp-up Rate<br>(Liquidus Temperature ( $T_L$ ) to Peak) |                                   | 3 °C / second max. |
| $T_{S(max)}$ to $T_L$ - Ramp-up Rate                             |                                   | 5 °C / second max. |
| Reflow                                                           | Temperature ( $T_L$ ) (Liquidus)  | 217 °C             |
|                                                                  | Temperature ( $T_L$ )             | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                                       |                                   | 260 +0/-5 °C       |
| Time within 5 °C of Actual Peak Temperature ( $T_p$ )            |                                   | 10 – 30 seconds    |
| Ramp-down rate                                                   |                                   | 6 °C / second max. |
| Time from 25 °C to Peak Temperature ( $T_p$ )                    |                                   | 8 minutes max.     |
| Do Not Exceed                                                    |                                   | 260 ° C            |

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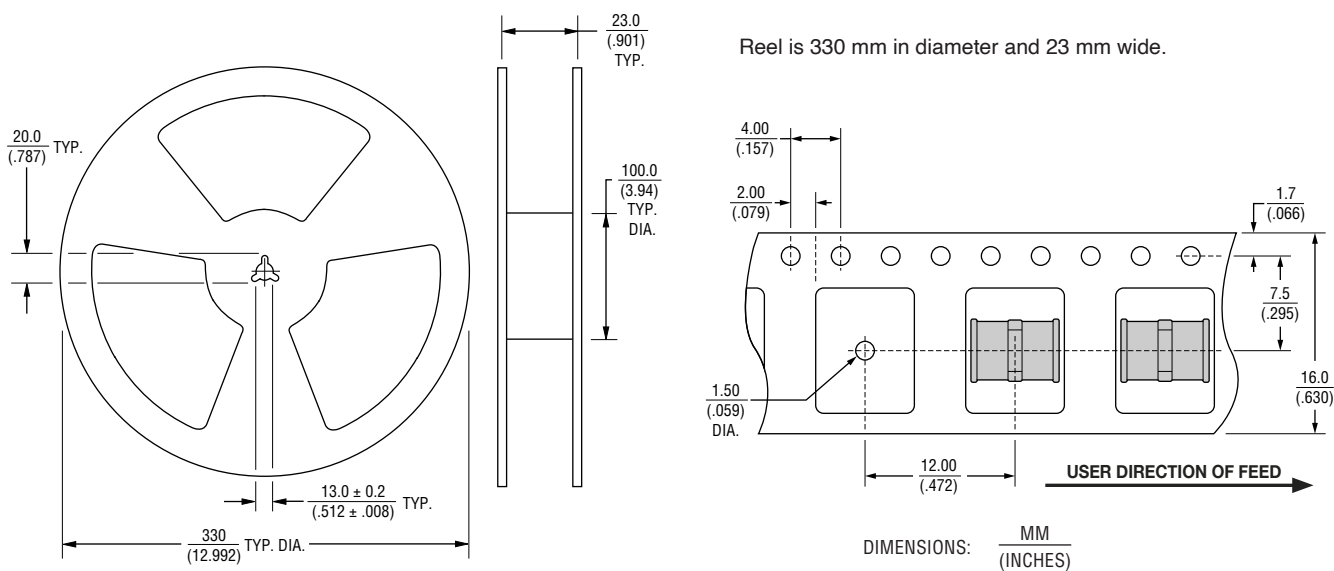
# GDT35 Series - Next-Generation 3-Electrode Gas Discharge Tube Arrestor

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## Packaging Specifications

| Model    | Standard Packaging Quantity |      |      |
|----------|-----------------------------|------|------|
|          | Bulk (Bag)                  | Box  | Reel |
| GDT35-BK | 250                         | 1000 | —    |
| GDT35-RP | —                           | —    | 1000 |

## REEL PACK



TOLERANCES (EXCEPT WHERE NOTED): X.X  $\frac{\pm 0.3}{(\pm .012)}$   
X.XX  $\frac{\pm 0.15}{(\pm .006)}$   
DEGREES  $\pm 1^\circ$

REV. B 12/23

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